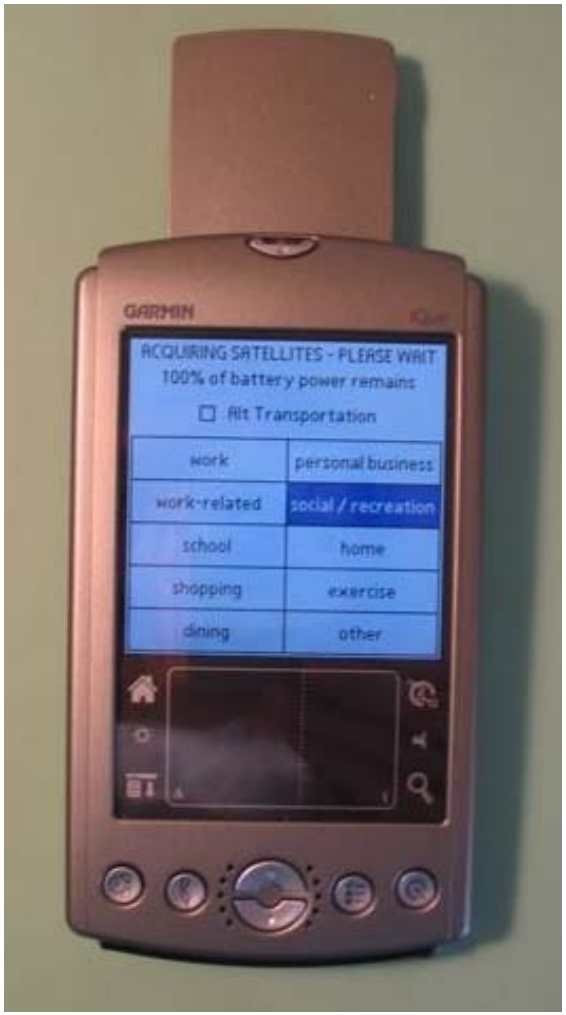
Where do people bicycle?

The role of infrastructure in determining bicycling behavior

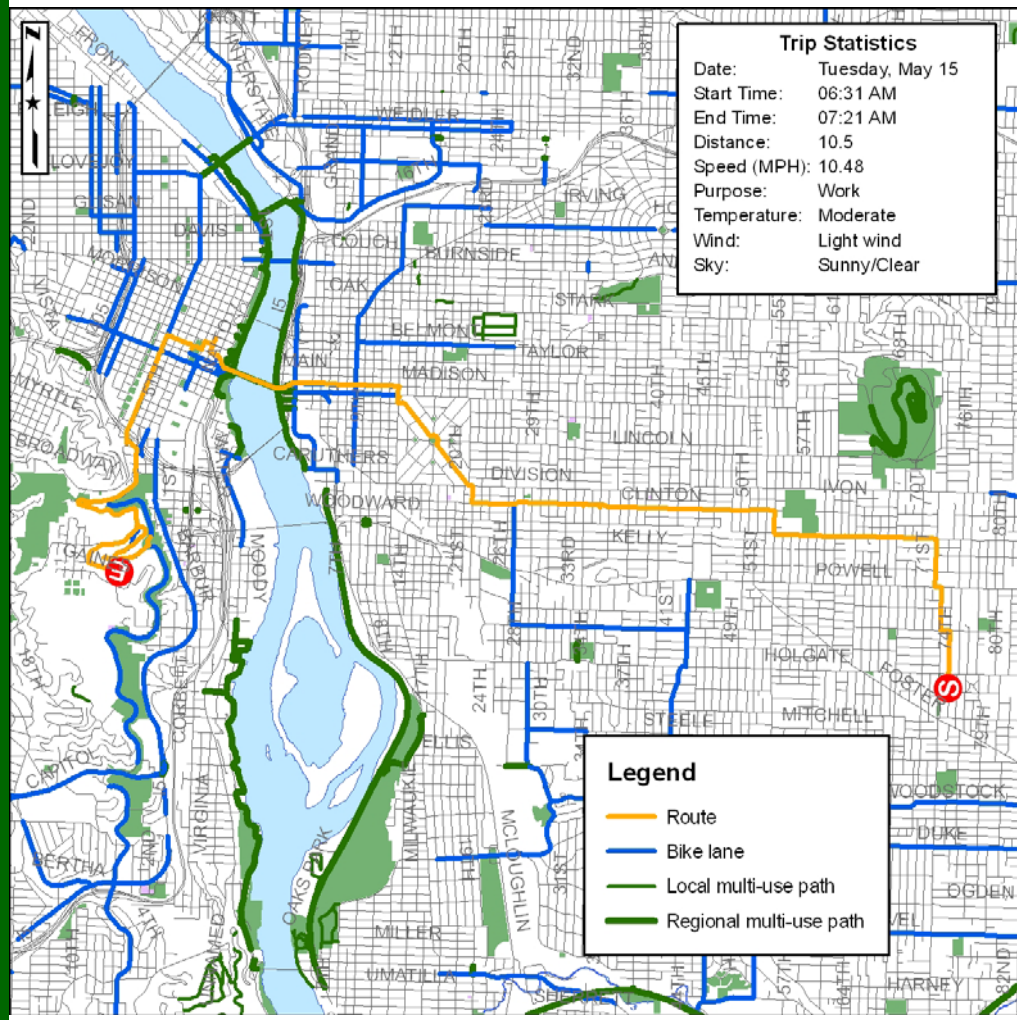
Jennifer Dill, Ph.D.
Center for Transportation Studies

Portland State
UNIVERSITY

GPS data collection



- About 150 people in 2007
  - Keep GPS for 7 days
  - Take on all bike trips (a few exceptions)
  - Not representative sample
- Participant enters some data
  - Trip purpose and weather
  - If taking bike on transit

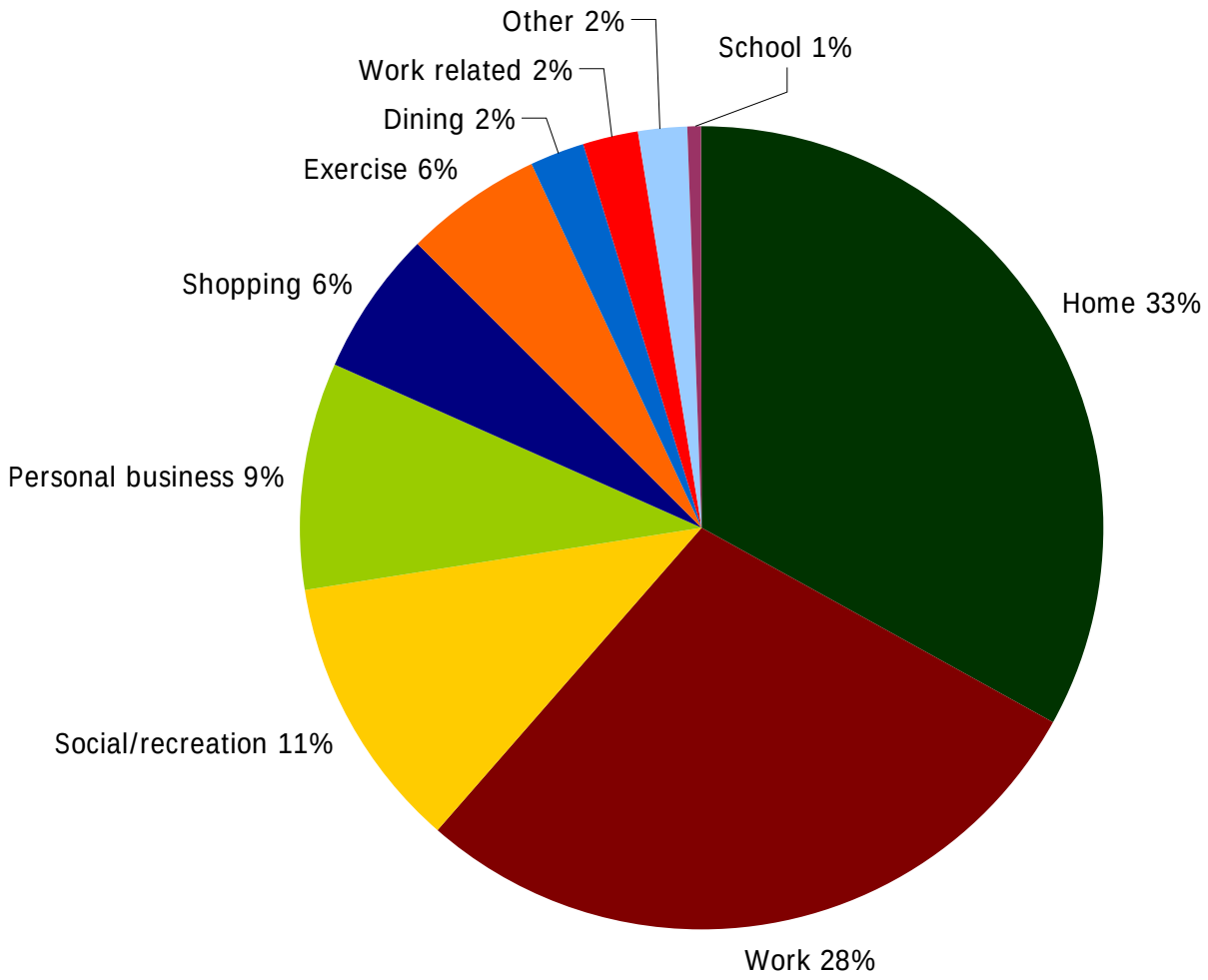


- Follow up on-line survey
  - Accuracy of route
  - Route choice decisions
  - Missing data

Today's data

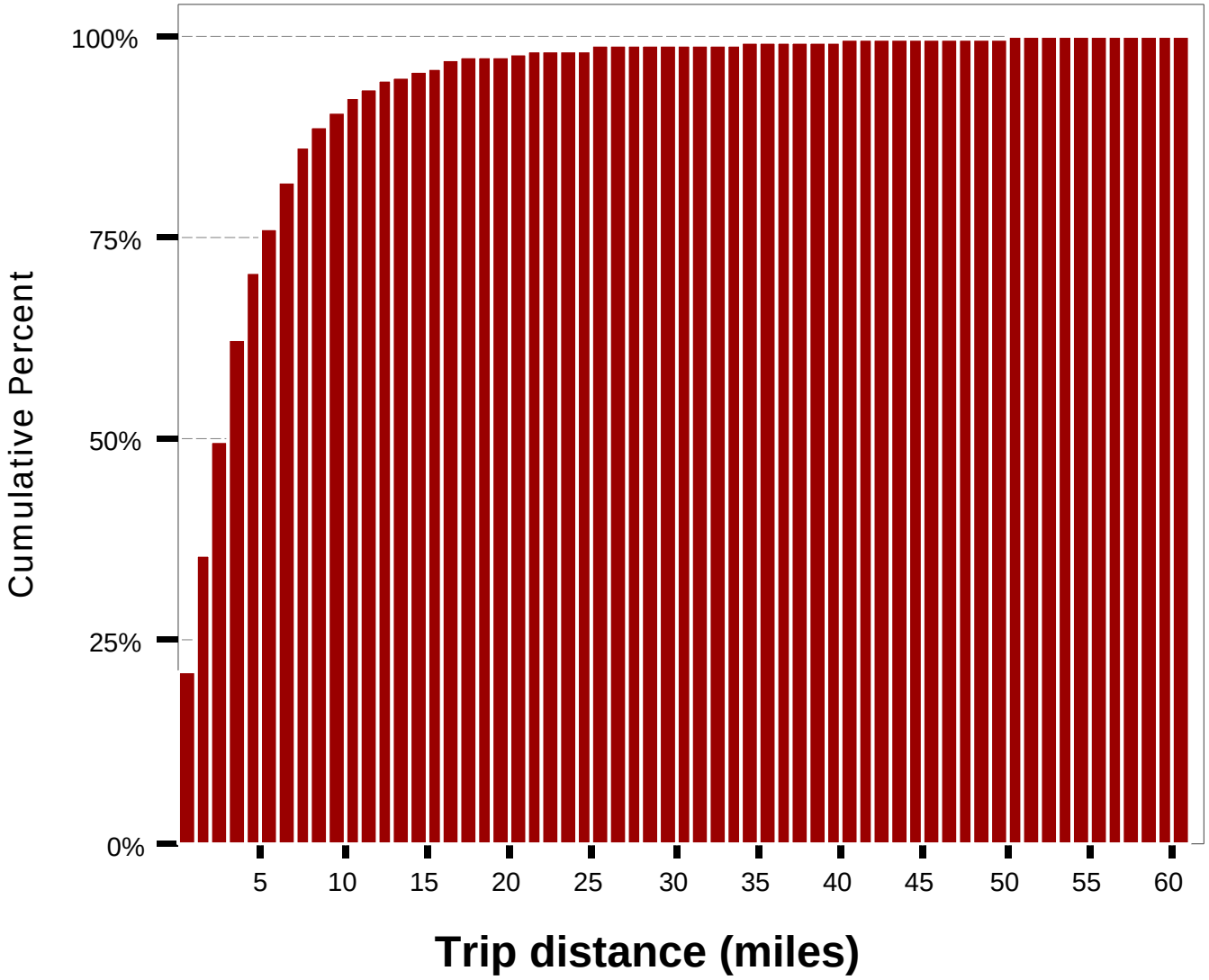
- 94 participants
  - 33% women
  - 86% have bachelors degree
  - 25% make under $50,000
  - 7% have no motor vehicle in household
  - All but one has a drivers license
  - 75% employed full-time
  - 90% in "good" or better health
- 1,045 bike trips
  - Averaged 1.5 trips per day

Trip destinations

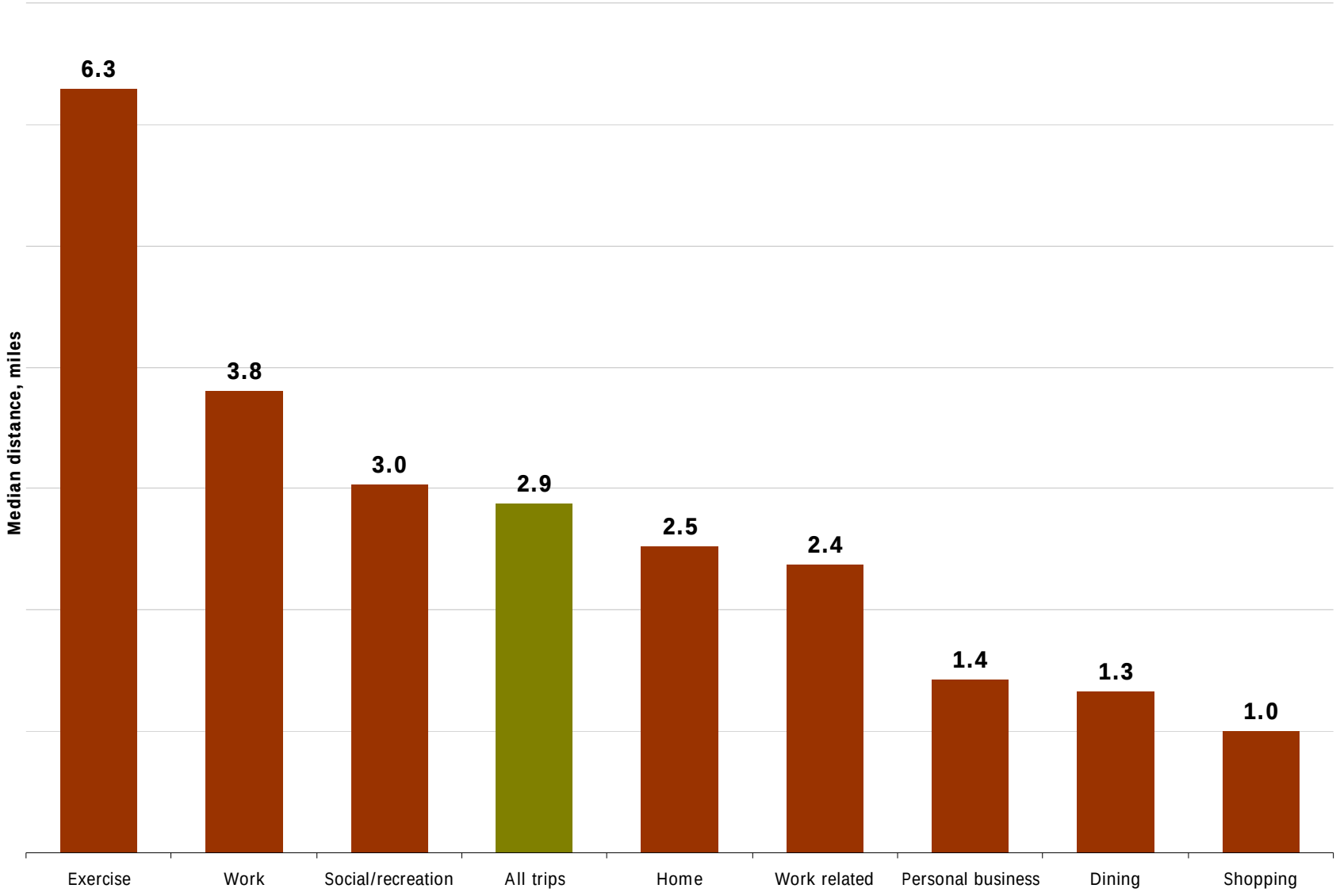


Trip distance

70% of trips are 5 miles or shorter



Trip distance by purpose



Cycling trip speeds

	Percent of	
	Trips	Total **time** spent biking
Less than 5 mph	5%	1%
5.0 – 9.9 mph	32%	22%
10.0 – 11.9 mph (slow, light effort, 6.0 METS)	27%	27%
12.0 – 13.9 mph (moderate effort, 8.0 METS)	21%	23%
14.0 – 15.9 mph (fast, vigorous effort, 10.0 METS)	10%	16%
16.0 – 19.9 mph (very fast, racing general, 12.0 METS)	6%	12%
20.0 mph and higher (racing, 16.0 METS)	<1%	<1%

Cyclists are using bike infrastructure

	% of bike travel (miles)	
	all travel	non-exercise travel
Roads without bike facilities	**52%**	**48%**
Primary arterials/highways, no bike lanes	4%	3%
Secondary arterials, no bike lanes	16%	12%
Minor streets, no bike lanes	31%	32%
Driveways, alleys, unimproved roads	2%	1%
Bike infrastructure	**48%**	**52%**
Primary arterials/highways, with bike lanes	9%	10%
Secondary arterials, with bike lanes	11%	11%
Minor streets, with bike lanes	6%	7%
Bike paths	13%	14%
Bike boulevards	9%	10%

Men ride in bike lanes more

	Average % of bike travel (distance)		
	Men	**Women**	**sig?**
Primary arterials/highways, no bike lanes	3%	2%	no
Secondary arterials, no bike lanes	13%	11%	no
Minor streets, no bike lanes	33%	**41%**	<0.05
Driveways, alleys, unimproved roads	2%	1%	no
Primary arterials/highways, with bike lanes	**9%**	4%	<0.10
Secondary arterials, with bike lanes	**12%**	6%	<.01
Minor streets, with bike lanes	6%	7%	no
Bike paths	12%	12%	no
Bike boulevards	9%	**14%**	<0.10

Priorities for route choice

Mean score
(1=not at all impt, 5=very impt)

	All trips
Avoiding streets with lots of vehicle traffic	3.63
Minimize total distance	3.57
Riding in a bike lane	2.98
Riding on signed bike routes	2.73
Reducing wait time due to stop signs/lights	2.63
Riding on an off-street bike trail/path	2.22
Avoiding hills	2.01
N	

Note: Exercise trips excluded

Cycling with other adults

- 31% of all trips included another adult
  - 53% of trips made by women!
  - 25% of commute trips
  - 48% of social/recreation trips
- Higher share of trip mileage on bike boulevards

Initial Conclusions

- The phone survey found that
  - Density of bike lanes was not a significant factor in determining whether people cycled regularly or not
  - Concerns over traffic are influencing many decisions
- The GPS data found that
  - Bike lanes *and* boulevards are being used by cyclists
  - Low volume streets and bike boulevards are used more by women

Policy implications

- Bike boulevards and a well-connected neighborhood street network may be particularly effective at encouraging new cyclists
- Bike lanes may be important in sustaining bicycling
  - Lanes make important connections in the network
  - May be used by more confident cyclists
  - Consider wider bike lanes – 5-6 feet

Questions?

- Stay tuned for more results
- Jennifer Dill
  http://web.pdx.edu/~jdill/